

WHAT IS CLAIMED IS:

1. An electromagnetic suspension system comprising:

an extensible member including a cylinder and a rod capable of displacement relative to the cylinder;

a first cylindrical member connected to the rod, either one of a coil member and a magnetic member being provided in the first cylindrical member; and

a second cylindrical member provided in such a manner as to permit radial movement thereof relative to the cylinder while preventing axial movement thereof relative to the cylinder, the other of the coil member and the magnetic member being provided in the second cylindrical member, the second cylindrical member facing either one of an inner side and an outer side of the first cylindrical member.

2. An electromagnetic suspension system comprising:

an extensible member including a cylinder and a rod capable of displacement relative to the cylinder;

a second cylindrical member connected to the cylinder, either one of a coil member and a magnetic member being provided in the second cylindrical member; and

a first cylindrical member provided in such a manner as to permit radial movement thereof relative to the rod while preventing axial movement thereof relative to the rod, the other of the coil member and the magnetic member being provided in the first cylindrical member, the first cylindrical member facing either one of an inner side and an outer side of the second cylindrical member.

3. An electromagnetic suspension system comprising:

an extensible member including a cylinder and a rod capable of displacement relative to the cylinder;

a second cylindrical member provided in such a manner as to permit radial movement thereof relative to the cylinder while preventing axial movement thereof relative to the cylinder, either one of a coil member and a magnetic member being provided in the second cylindrical member; and

a first cylindrical member provided in such a manner as to permit radial movement thereof relative to the rod while preventing axial movement thereof relative to the rod, the other of the coil member and the magnetic member being provided in the first cylindrical member, the first cylindrical member facing either one of an inner side and an outer side of the second cylindrical member.

4. An electromagnetic suspension system comprising:

an extensible member including a cylinder and a rod capable of displacement relative to the cylinder;

a rod guide provided in the extensible member and adapted to guide displacement of the rod;

a spherical bearing provided on an outer circumferential surface of the rod guide;

a second cylindrical member guided by the spherical bearing so that it is capable of performing rocking movement, either one of a coil member and a magnetic member being provided in the second cylindrical member; and

a first cylindrical member which is integral with the rod or which is provided in such a manner as to permit

radial movement thereof relative to the rod while preventing axial movement thereof relative to the rod, the other of the coil member and the magnetic member being provided in the first cylindrical member, the first cylindrical member facing the second cylindrical member.

5. An electromagnetic suspension system according to claim 1, wherein a bearing member for guiding sliding movement of the first cylindrical member and the second cylindrical member is provided between the first cylindrical member and the second cylindrical member.

6. An electromagnetic suspension system according to claim 1, wherein a universal joint mechanism for permitting the radial movement while preventing the axial movement is provided between the cylinder and the second cylindrical member.

7. An electromagnetic suspension system according to claim 2, wherein a universal joint mechanism for permitting the radial movement while preventing the axial movement is provided between the rod and the first cylindrical member.

8. An electromagnetic suspension system according to claim 3, wherein universal joint mechanisms for permitting the radial movement while preventing the axial movement are respectively provided between the cylinder and the second cylindrical member and between the rod and the first cylindrical member.

9. An electromagnetic suspension system according to claim 2, wherein a bearing member for guiding sliding movement of the first cylindrical member and the second

cylindrical member is provided between the first cylindrical member and the second cylindrical member.

10. An electromagnetic suspension system according to claim 3, wherein a bearing member for guiding sliding movement of the first cylindrical member and the second cylindrical member is provided between the first cylindrical member and the second cylindrical member.

11. An electromagnetic suspension system according to claim 4, wherein a bearing member for guiding sliding movement of the first cylindrical member and the second cylindrical member is provided between the first cylindrical member and the second cylindrical member.

12. An electromagnetic suspension system according to claim 5, wherein a universal joint mechanism for permitting the radial movement while preventing the axial movement is provided between the cylinder and the second cylindrical member.

13. An electromagnetic suspension system according to claim 4, wherein a universal joint mechanism for permitting the radial movement while preventing the axial movement is provided between the rod and the first cylindrical member.

14. An electromagnetic suspension system according to claim 9, wherein a universal joint mechanism for permitting the radial movement while preventing the axial movement is provided between the rod and the first cylindrical member.

15. An electromagnetic suspension system according to claim 11, wherein a universal joint mechanism for permitting the radial movement while preventing the axial

movement is provided between the rod and the first cylindrical member.

16. An electromagnetic suspension system according to claim 10, wherein universal joint mechanisms for permitting the radial movement while preventing the axial movement are respectively provided between the cylinder and the second cylindrical member and between the rod and the first cylindrical member.